

REMARKS

Pending Claims

Assuming entry of this amendment, claims 1-13 are still pending. Claims 1, 10 and 11 are independent.

Claim Objections

The Examiner objected to "the physical" in claims 1 and 10 and suggested that this should read "the physical form." Claims 1 and 10 have been amended accordingly.

Claim Rejections

35 U.S.C. §103 – *Luther* and *Larson* (and *Al-Hussein* and *Shepard*)

The Examiner rejected claims 1, 2, 8 and 11 as being obvious and therefore unpatentable in view of a hypothesized combination of the teachings of US 5,721,940 ("*Luther*") and US 5,943,137 ("*Larson*"). The Examiner further rejected claims 3-5, 10 and 13 in view of US 5,809,167 ("*Al-Hussein*") in addition to *Luther* and *Larson*; and claims 6, 7, and 9 in view of US 4,021,777 ("*Shepard*"), also in addition to *Luther* and *Larson*. Although the claimed subject matter was not changed by the previous amendment so much that an additional search was required, the Examiner cited *Luther* and *Larson* for the first time, yet made the Office action final.

Luther is primarily concerned with finding a way to *reduce* the amount of data that must be processed from a completed form. One reason *Luther* needs this reduction is the concern – present perhaps in many systems at the time of *Luther's* first filing, in 1993 – for limited storage capacity. See, for example:

Col. 1, lines 52-67:

In addition, companies which utilize automatic sorting practices by scanning all completed forms utilize large amounts of mass storage. These companies are therefore limited by the amount of mass storage available for storing images of completed forms. Even though storing an entire image of a completed form cuts down on the number of man-hours used to manually sort through completed forms, the amount of mass

storage increases exponentially. In this regard, since only a small portion of a completed form contains desired data, a large portion of memory is wasted by storing redundant elements in each completed form, such as the blank printed form itself, and captions like name, date, address, etc. Image data which includes unused portions, or "null fields", and "white space" waste additional mass storage as well. Thus, a large portion of mass storage is utilized for useless data and/or non-data storage.

Another reason *Luther's* system is intended to deliberately exclude even "non-invariant," that is, potentially valuable, non-standard information is to make it easier for *manual* data entry. See, for example, (emphasis added):

Col. 2, lines 3-9:

That is, conventionally, once a completed document has been sorted and stored, an entire document must be displayed to an operator so that the operator can enter the desired data from the completed form. Consequently, data entry and retrieval are both time-consuming and costly.

Col. 2, lines 42-44:

Because only dissimilar data is displayed to an operator, the operator can more easily recognize what **data is to be keyed-in.**

Col. 8, lines 1-1-7 and 12-20:

In accordance with predesignated information, the dissimilar elements and the predesignated fields are compared once again. The dissimilar elements falling within the preselected fields are stored and **the remaining dissimilar elements are discarded.** [Note: Not just "invariant" information is discarded!] The data within the preselected fields are either subjected to further processing or displayed to the data entry operator **for manual input.**

...

Accordingly, in order to remove all extraneous items from the form, the form is input into the data entry and retrieval system and, in accordance with the present invention, **only the desired information is displayed to the data entry operator for manual-key input.** As a result, a data entry operator can reduce

the amount of time in reviewing a completed form for useful data.

Col. 6, lines 23-28:

... it is desirable, and **more efficient to extract only information regarding certain items**, such as invoice number, dates, description of items, quantity, and prices. The remaining information on the form is deemed to be useless data and, therefore, **it is not extracted**.

Note that *Luther's* extraction of "information" cannot reasonably be assumed to be the same as the applicants' extraction of actual "least partial **values** of ... parameters" and "automatically storing the extracted **values**" since, if *Luther* did so, there would be no need for subsequent "manual-key input."

Luther therefore not only lacks the features of the invention recited in the independent claims of "**automatically** extracting from the identified data fields the at least partial values of the corresponding parameters; and **automatically** storing the extracted values in a predetermined format in a memory for subsequent processing," but rather *Luther* specifically **teaches away from** such automatic processing, for explicitly stated reasons. Note that automatic extraction of the actual data and storing it is different from simply extracting a representation of the corresponding fields so an operator can interpret and input the information manually – *Luther* may extract sub-images that are presented for manual entry to an operator, but *Luther* does not teach automatic extraction and storage of the actual information itself.

Even though it automatically extracts relevant information from the electronic representation of a received physical form, the applicants invention still does not "hide," distort or deliberately discard anything: As the independent claims now recite, also automatically stored is "as the representation of the received physical form as it was received." This feature of the applicants' invention retains unaltered not only such useful and potentially necessary information as signatures, but also "metadata" about the received form such as the header information automatically generated by fax machines when they transmit. This also allows for greater robustness in reception and interpretation, since even "unexpected" handwritten annotations can be captured for future confirmation, whereas these would be discarded by *Luther* and could possibly

even lead to incorrect form identification if such annotations accidentally affected what is perceived as the number of "invariants" and thus the "hierarchical order" of the form. Moreover, even in *Luther's* more "sophisticated" third embodiment (col. 9, lines 7-41, especially lines 34-35), *Luther* displays the "entire completed form" only by superimposing extracted data on a displayed blank form; of course, since form metadata or annotations will not match any part of a form dictionary, *Luther* would have to discard this information.

Even if one were to combine *Luther* with *Larson*, *Larson's* teachings relating to automatic form identification using "machine readable markings" do not make up for these weaknesses of the *Luther* system. Such a combination would also display yet another important weakness, namely, the requirement for total centralization, that is, an essentially "closed" communication system:

As the Examiner himself noted, *Luther* does not provide for any reception of a completed form at all. Rather, *Luther* requires that completed forms must be scanned in in the same way as blank forms are originally created. In other words, even completed forms must be "input" into *Luther's* system using scanning equipment controlled by his special programs:

Col. 3, lines 60-63 (emphasis added):

Document image management system 1 includes document scanner 2 for scanning printed forms, including blank printed forms **and completed printed forms**.

Similarly, *Larson's* fax server system also assumes that all the participants in the system are using specifically known machines. See, for example (emphasis added):

Col. 2, lines 23-27:

The custom configured FAX form is also electronically transmitted from the computer to **selected branch locations** for completion. Completed FAX forms are electronically received into the computer from the **selected branch locations** ...

Col. 7, lines 17-22

Server location 10 creates FAX forms 12 ... which are both stored into memory files as templates and transmitted to ***selected interactive branch locations*** 11.

In *Larson*, even the recipients of forms must be known in advance and must be able to be at one of *Larson's* selected branch locations even to get and complete a form:

Col. 9, lines 53-58, and line 65 - col. 10., line 1
(emphasis added):

Routine E4 shown in FIG. 4 and labelled item 64 describing how ***recipients are chosen*** is now described in detail. Referring to FIG. 10, the ***user first chooses the recipients to receive a FAX form 12*** at step 132. The several recipients selected to be sent a selected FAX form 12 are stored in memory at step 134 whereupon at step 136 the completed send list F3 is written to a file labelled 138 and the routine exits to step A1.

... Next, the form is retrieved at step 112 from form file F2 ... and transmitted ... to remote branch location 20 to generate form 22.

Both *Luther* and *Larson* require such "controlled" operating environments to reduce the distortions (such as skewing) that would arise if their systems received forms from arbitrary senders.

In contrast, the applicants' independent claims now recite: "automatically receiving from any of a plurality of ***arbitrary*** senders, via a ***publicly accessible*** transmission channel, an electronic representation of an image."

To understand the importance of this flexibility, consider the case in which any of a class of students wish to send to their school a respective form that gives their answers to a "take home" assignment or test. Using the applicants' invention as claimed, all they need is the form, which they could, for example, print out or pick up from a stack at school, or simply get as a hand-out from their instructor, as well as access to any standard fax machine or the like. After completing the form, they can then simply fax it to the school, whose server would receive the fax, automatically

extract and store for the instructor the relevant information – including actual values of answers – and will also be able to let the instructor see handwritten answers, as well as an authenticating signature.

Using *Luther's* system, the school would have to collect and manually scan in each form, only some of whose information would then be presented to an operator for "manual-key input," (introducing the possibility of difficult-to-detect entry errors) which the instructor would supposedly view later on some display. Using *Larson's* system, the students would need to be designated in advance, and would have to appear at a "selected" branch location to get the answer form at all.

In short, both *Luther* and *Larson* – alone or in combination – lack claimed features of the applicants' invention that greatly limit their usefulness and flexibility in a modern workplace with a mobile, often virtual workforce. *Luther* and *Larson* are indeed prior art, in that they represent centralized solutions for some problems in a centralized work environment. As storage has become a cheap and accessible commodity, one can even say that the problem *Luther* needed to solve has been eliminated by improvements in other technology, in particular, hardware. The applicants' invention, on the other hand, flexibly solves a problem still found in the modern workplace in today's global economy, by supporting dynamic transactions from arbitrary users with publicly accessible, ubiquitous devices.

As for *Shepard* and *Al-Hussein*, these references also fail to disclose the novel and non-obvious features now recited in the amended independent claims. Consequently, no combination of any of the cited prior art renders the claimed invention obvious, especially since the invention provides useful benefits unattainable using the prior art.

CONCLUSION

The applicants' invention as claimed therefore includes several element that are lacking in the cited references, and that provide specific advantages to users, in particular, flexibility, openness, automation, and convenience. The distinguishing features that make this possible are included in all the independent claims and are accordingly inherited by the remaining, dependent claims. Consequently, the applicants respectfully submit that the amended claims should be allowable over the cited art of record.

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